<120> ALPHAVIRUS VECTORS AND VIROSOMES WITH MODIFIED HIV GENES FOR USE AS

SEQUENCE LISTING

ATTORNEY DOCKET NO. 01113.0001U3

<130> 01113.0001U3

<150> 09/902,537 <151> 2001-07-09

<150> 60/216,995

<151> 2000-07-07

<160> 19

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence; Note =
 synthetic construct

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aaa ctg atc gaa acg gag gtg gac cca tcc gac acg atc ctt gac att
                                                                    192
Lys Leu Ile Glu Thr Glu Val Asp Pro Ser Asp Thr Ile Leu Asp Ile
                        55
                                            60
gga agt gcg ccc gcc cgc aga atg tat tct aag cac aag tat cat tgt
                                                                    240
Gly Ser Ala Pro Ala Arg Arg Met Tyr Ser Lys His Lys Tyr His Cys
65
                    70
atc tgt ccg atg aga tgt gcg gaa gat ccg gac aga ttg tat aag tat
                                                                    288
Ile Cys Pro Met Arg Cys Ala Glu Asp Pro Asp Arg Leu Tyr Lys Tyr
                85
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		aag Lys														336
		aaa Lys 115														384
		gag Glu														432
ggg Gly 145	caa Gln	gtc Val	gct Ala	gtt Val	tac Tyr 150	cag Gln	gat Asp	gta Val	tac Tyr	gcg Ala 155	gtt Val	gac Asp	gga Gly	ccg Pro	aca Thr 160	480
agt Ser	ctc Leu	tat Tyr	cac His	caa Gln 165	gcc Ala	aat Asn	aag Lys	gga Gly	gtt Val 170	aga Arg	gtc Val	gcc Ala	tac Tyr	tgg Trp 175	ata Ile	528
ggc Gly	ttt Phe	gac Asp	acc Thr 180	acc Thr	cct Pro	ttt Phe	atg Met	ttt Phe 185	aag Lys	aac Asn	ttg Leu	gct Ala	gga Gly 190	gca Ala	tat Tyr	576
		tac Tyr 195														624
aac Asn	ata Ile 210	ggc Gly	cta Leu	tgc Cys	agc Ser	tct Ser 215	gac Asp	gtt Val	atg Met	gag Glu	cgg Arg 220	tca Ser	cgt Arg	aga Arg	gly aaa	672
atg Met 225	tcc Ser	att Ile	ctt Leu	aga Arg	aag Lys 230	aag Lys	tat Tyr	ttg Leu	aaa Lys	cca Pro 235	tcc Ser	aac Asn	aat Asn	gtt Val	cta Leu 240	720
ttc Phe	tct ser	gtt Val	ggc Gly	tcg Ser 245	acc Thr	atc Ile	tac Tyr	cac His	gag Glu 250	aag Lys	agg Arg	gac Asp	tta Leu	ctg Leu 255	agg Arg	768
Ser	Trp	cac His	Leu 260	Pro	Ser	Val	Phe	His 265	Leu	Arg	Gly	Lys	Gln 270	Asn	Tyr	816
aca Thr	tgt Cys	cgg Arg 275	tgt Cys	gag Glu	act Thr	ata Ile	gtt Val 280	agt Ser	tgc Cys	gac Asp	gly aaa	tac Tyr 285	gtc Val	gtt Val	aaa Lys	864
aga Arg	ata Ile 290	gct Ala	atc Ile	agt Ser	cca Pro	ggc Gly 295	ctg Leu	tat Tyr	gly ggg	aag Lys	cct Pro 300	tca Ser	ggc Gly	tat Tyr	gct Ala	912
gct Ala 305	acg Thr	atg Met	cac His	cgc Arg	gag Glu 310	gga Gly	ttc Phe	ttg Leu	tgc Cys	tgc Cys 315	aaa Lys	gtg Val	aca Thr	gac Asp	aca Thr 320	960

tta Leu	aac Asn	gly aaa	gag Glu	agg Arg 325	gtc Val	tct Ser	ttt Phe	ccc Pro	gtg Val 330	tgc Cys	acg Thr	tat Tyr	gtg Val	cca Pro 335	gct Ala	1008
aca Thr	ttg Leu	tgt Cys	gac Asp 340	caa Gln	atg Met	act Thr	gly	ata Ile 345	ctg Leu	gca Ala	aca Thr	gat Asp	gtc Val 350	agt Ser	gcg Ala	1056
gac Asp	gac A s p	gcg Ala 355	caa Gln	aaa Lys	ctg Leu	ctg Leu	gtt Val 360	Glà aaa	ctc Leu	aac Asn	cag Gln	cgt Arg 365	ata Ile	gtc Val	gtc Val	1104
aac Asn	ggt Gly 370	cgc Arg	acc Thr	cag Gln	aga Arg	aac Asn 375	acc Thr	aat Asn	acc Thr	atg Met	aaa Lys 380	aat Asn	tac Tyr	ctt Leu	ttg Leu	1152
ccc Pro 385	gta Val	gtg Val	gcc Ala	cag Gln	gca Ala 390	ttt Phe	gct Ala	agg Arg	tgg Trp	gca Ala 395	aag Lys	gaa Glu	tat Tyr	aag Lys	gaa Glu 400	1200
gat Asp	caa Gln	gaa Glu	gat Asp	gaa Glu 405	agg Arg	cca Pro	cta Leu	gga Gly	cta Leu 410	cga Arg	gat Asp	aga Arg	cag Gln	tta Leu 415	gtc Val	1248
Met	Gly	Cys	Cys 420	Trp	Ala	ttt Phe	Arg	Arg 425	His	Lys	Ile	Thr	Ser 430	Ile	Tyr	1296
aag Lys	cgc Arg	ccg Pro 435	gat Asp	acc Thr	caa Gln	acc Thr	atc Ile 440	atc Ile	aaa Lys	gtg Val	aac Asn	agc Ser 445	gat Asp	ttc Phe	cac His	1344
tca Ser	ttc Phe 450	gtg Val	ctg Leu	ccc Pro	agg Arg	ata Ile 455	Gly	agt Ser	aac Asn	aca Thr	ttg Leu 460	gag Glu	atc Ile	Gly aaa	ctg Leu	1392
aga Arg 465	aca Thr	aga Arg	atc Ile	agg Arg	aaa Lys 470	atg Met	tta Leu	gag Glu	gag Glu	cac His 475	aag Lys	gag Glu	ccg Pro	tca Ser	cct Pro 480	1440
ctc Leu	att Ile	acc Thr	gcc Ala	gag Glu 485	gac Asp	gta Val	caa Gln	gaa Glu	gct Ala 490	aag Lys	tgc Cys	gca Ala	gcc Ala	gat Asp 495	gag Glu	1488
gct Ala	aag Lys	gag Glu	gtg Val 500	cgt Arg	gaa Glu	gcc Ala	gag Glu	gag Glu 505	ttg Leu	cgc Arg	gca Ala	gct Ala	cta Leu 510	cca Pro	cct Pro	1536
ttg Leu	gca Ala	gct Ala 515	gat Asp	gtt Val	gag Glu	gag Glu	ccc Pro 520	act Thr	ctg Leu	gaa Glu	gcc Ala	gat Asp 525	gtc Val	gac Asp	ttg Leu	1584
atg Met	tta Leu 530	caa Gln	gag Glu	gct Ala	gly aaa	gcc Ala 535	ggc Gly	tca Ser	gtg Val	gag Glu	aca Thr 540	cct Pro	cgt Arg	ggc Gly	ttg Leu	1632

ata Ile 545	aag Lys	gtt Val	acc Thr	agc Ser	tac Tyr 550	gct Ala	ggc Gly	gag Glu	gac Asp	aag Lys 555	atc Ile	ggc Gly	tct Ser	tac Tyr	gct Ala 560	1680
gtg Val	ctt Leu	tct Ser	ccg Pro	cag Gln 565	gct Ala	gta Val	ctc Leu	aag Lys	agt Ser 570	gaa Glu	aaa Lys	tta Leu	tct Ser	tgc Cys 575	atc Ile	1728
cac His	cct Pro	ctc Leu	gct Ala 580	gaa Glu	caa Gln	gtc Val	ata Ile	gtg Val 585	ata Ile	aca Thr	cac His	tct Ser	ggc Gly 590	cga Arg	aaa Lys	1776
gly	cgt Arg	tat Tyr 595	gcc Ala	gtg Val	gaa Glu	cca Pro	tac Tyr 600	cat His	ggt Gly	aaa Lys	gta Val	gtg Val 605	gtg Val	cca Pro	gag Glu	1824
gga Gly	cat His 610	gca Ala	ata Ile	ccc Pro	gtc Val	cag Gln 615	gac Asp	ttt Phe	caa Gln	gct Ala	ctg Leu 620	agt Ser	gaa Glu	agt Ser	gcc Ala	1872
acc Thr 625	att Ile	gtg Val	tac Tyr	aac Asn	gaa Glu 630	cgt Arg	gag Glu	ttc Phe	gta Val	aac Asn 635	agg Arg	tac Tyr	ctg Leu	cac His	cat His 640	1920
att Ile	gcc Ala	aca Thr	cat His	gga Gly 645	gga Gly	gcg Ala	ctg Leu	aac Asn	act Thr 650	gat Asp	gaa Glu	gaa Glu	tat Tyr	tac Tyr 655	aaa Lys	1968
Thr	gtc Val	Lys	Pro 660	Ser	Glu	His	Asp	Gly 665	Glu	Tyr	Leu	Tyr	Asp 670	Ile	Asp	2016
agg Arg	aaa Lys	cag Gln 675	tgc Cys	gtc Val	aag Lys	aaa Lys	gaa Glu 680	cta Leu	gtc Val	act Thr	Gl ^à aaa	cta Leu 685	Gl ^A	ctc Leu	aca Thr	2064
ggc Gly	gag Glu 690	ctg Leu	gtg Val	gat Asp	cct Pro	ccc Pro 695	ttc Phe	cat His	gaa Glu	ttc Phe	gcc Ala 700	tac Tyr	gag Glu	agt Ser	ctg Leu	2112
aga Arg 705	aca Thr	cga Arg	cca Pro	gcc Ala	gct Ala 710	cct Pro	tac Tyr	caa Gln	gta Val	cca Pro 715	acc Thr	ata Ile	gly ggg	gtg Val	tat Tyr 720	2160
ggc Gly	gtg Val	cca Pro	gga Gly	tca Ser 725	ggc Gly	aag Lys	tct Ser	ggc Gly	atc Ile 730	att Ile	aaa Lys	agc Ser	gca Ala	gtc Val 735	acc Thr	2208
Lys	aaa Lys	Asp	Leu 740	Val	Val	Ser	Ala	Lys 745	Lys	Glu	Asn	Cys	Ala 750	Glu	Ile	2256
ata Ile	agg Arg	gac Asp 755	gtc Val	aag Lys	aaa Lys	atg Met	aaa Lys 760	Gly aaa	ctg Leu	gac Asp	gtc Val	aat Asn 765	gcc Ala	aga Arg	act Thr	2304

									ΑŢ	TORI	A EP T	DOC.	KEI	NO.	01113	. 00010.
						aat Asn 775										2352
tat Tyr 785	att Ile	gac Asp	gaa Glu	gct Ala	ttt Phe 790	gct Ala	tgt Cys	cat His	gca Ala	ggt Gly 795	act Thr	ctc Leu	aga Arg	gcg Ala	ctc Leu 800	2400
ata Ile	gcc Ala	att Ile	ata Ile	aga Arg 805	cct Pro	aaa Lys	aag Lys	gca Ala	gtg Val 810	CtC Leu	tgc Cys	ggg Gly	gat Asp	CCC Pro 815	aaa Lys	2448
cag Gln	tgc Cys	ggt Gly	ttt Phe 820	ttt Phe	aac Asn	atg Met	atg Met	tgc Cys 825	ctg Leu	aaa Lys	gtg Val	cat His	ttt Phe 830	aac Asn	cac His	2496
						ttc Phe										2544
aaa Lys	tct Ser 850	gtg Val	act Thr	tcg Ser	gtc Val	gtc Val 855	tca Ser	acc Thr	ttg Leu	ttt Phe	tac Tyr 860	gac Asp	aaa Lys	aaa Lys	atg Met	2592
aga Arg 865	acg Thr	acg Thr	aat Asn	ccg Pro	aaa Lys 870	gag Glu	act Thr	aag Lys	att Ile	gtg Val 875	att Ile	gac Asp	act Thr	acc Thr	ggc 880	2640
						gac Asp										2688
tgg Trp	gtg Val	aag Lys	cag Gln 900	ttg Leu	caa Gln	ata Ile	gat Asp	tac Tyr 905	aaa Lys	ggc Gly	aac Asn	gaa Glu	ata Ile 910	atg Met	acg Thr	2736
gca Ala	gct Ala	gcc Ala 915	tct Ser	caa Gln	gly ggg	ctg Leu	acc Thr 920	cgt Arg	aaa Lys	ggt Gly	gtg Val	tat Tyr 925	gcc Ala	gtt Val	cgg Arg	2784
						cct Pro 935										2832
aac Asn 945	gtc Val	cta Leu	ctg Leu	acc Thr	cgc Arg 950	acg Thr	gag Glu	gac Asp	cgc Arg	atc Ile 955	gtg Val	tgg Trp	aaa Lys	aca Thr	cta Leu 960	2880
gcc Ala	ggc Gly	gac Asp	cca Pro	tgg Trp 965	ata Ile	aaa Lys	aca Thr	ctg Leu	act Thr 970	gcc Ala	aag Lys	tac Tyr	cct Pro	999 Gly 975	aat Asn	2928
ttc Phe	act Thr	gcc Ala	acg Thr 980	ata Ile	gag Glu	gag Glu	tgg Trp	caa Gln 985	gca Ala	gag Glu	cat His	gat Asp	gcc Ala 990	atc Ile	atg Met	2976

agg cac atc Arg His Ile 995	Leu Glu Arg	a ccg gac g Pro Asp 1000	Pro Thr A	gac gtc tto Asp Val Pho	e Gln Asn	aag 3 Lys	3024
gca aac gtg Ala Asn Val 1010							3072
ggc ata gac Gly Ile Asp 1025	atg acc act Met Thr Thi 103	Glu Gln	Trp Asn T	act gtg ga Thr Val Asp 1035	tat ttt Tyr Phe	gaa 3 Glu 1040	3120
acg gac aaa Thr Asp Lys	gct cac tca Ala His Sen 1045	gca gag Ala Glu	ata gta t Ile Val I 1050	tg aac caa Leu Asn Gli	a cta tgc 1 Leu Cys 105	Val	3168
agg ttc ttt Arg Phe Phe		Leu Asp					3216
gtt ccg tta Val Pro Leu 1075	Ser Ile Arg	g aat aat g Asn Asn 1080	His Trp A	gat aac tco Asp Asn Sei 108	r Pro Ser	cct 3 Pro	3264
aac atg tac Asn Met Tyr 1090							3312
tac cca caa Tyr Pro Gln 1105	ctg cct cgg Leu Pro Arg	Ala Val	Ala Thr G	gga aga gto Sly Arg Val .115	c tat gac L Tyr Asp	atg 3 Met 1120	360
aac act ggt Asn Thr Gly						Pro	408
gta aac aga Val Asn Arg				tc cac cat	aat gaa	cac 3	456
	1140		Leu Val L 1145				
cca cag agt Pro Gln Ser 1155	gac ttt tct Asp Phe Ser	tca ttc	1145 gtc agc a Val Ser L	eu His His	s Asn Glu 1150 g ggc aga s Gly Arg	His act 3	504
cca cag agt Pro Gln Ser	gac ttt tct Asp Phe Ser gtc ggg gaa	tca ttc Ser Phe 1160	1145 gtc agc a Val Ser L tcc gtc c	eu His His aaa ttg aag ys Leu Lys 116	S Asn Glu 1150 g ggc aga s Gly Arg 55	His act 3 Thr	504
cca cag agt Pro Gln Ser 1155 gtc ctg gtg Val Leu Val	gac ttt tct Asp Phe Ser gtc ggg gaa Val Gly Glu gac cgg cct	tca ttc Ser Phe 1160 aag ttg Lys Leu 1175 gag gct Glu Ala	1145 gtc agc a Val Ser L tcc gtc c Ser Val P acc ttc a Thr Phe A	aaa ttg aag ays Leu Lys 116 ca ggc aa Pro Gly Lys 1180	s Asn Glu 1150 g ggc aga s Gly Arg 55 a atg gtt s Met Val	His act 3 Thr gac 3 Asp	

agg Arg	acc Thr	cca Pro	tat Tyr 122	Lys	tac Tyr	cat His	cac His	tat Tyr 122	Gln	cag Gln	tgt Cys	gaa Glu	gac Asp 123	His	gcc Ala	3696
att Ile	aag Lys	ctt Leu 123!	Ser	atg Met	ttg Leu	acc Thr	aag Lys 124	Lys	gct Ala	tgt Cys	ctg Leu	cat His 124!	Leu	aat Asn	ccc Pro	3744
		Thr			agc Ser		${\tt Gl}_{\tt Y}$					Asp				3792
gaa Glu 126	Ser	atc Ile	att Ile	ggt Gly	gct Ala 1270	Ile	gcg Ala	cgg Arg	cag Gln	ttc Phe 1275	Lys	ttt Phe	tcc Ser	cgg Arg	gta Val 1280	3840
tgc Cys	aaa Lys	ccg Pro	aaa Lys	tcc Ser 128	tca Ser 5	ctt Leu	gaa Glu	gag Glu	acg Thr 1290	Glu	gtt Val	ctg Leu	ttt Phe	gta Val 129	Phe	3888
att Ile	gly aaa	tac Tyr	gat Asp 1300	Arg	aag Lys	gcc Ala	cgt Arg	acg Thr 1305	His	aat Asn	cct Pro	tac Tyr	aag Lys 1310	Leu	tca Ser	3936
tca Ser	acc Thr	ttg Leu 1319	Thr	aac Asn	att Ile	tat Tyr	aca Thr 1320	Gly	tcc Ser	aga Arg	ctc Leu	cac His 1325	Glu	gcc Ala	gga Gly	3984
tgt Cys	gca Ala 1330	Pro	tca Ser	tat Tyr	cat His	gtg Val 1335	Val	cga Arg	gjà aaa	gat Asp	att Ile 1340	Ala	acg Thr	gcc Ala	acc Thr	4032
gaa Glu 1349	Gly	gtg Val	att Ile	ata Ile	aat Asn 1350	Ala	gct Ala	aac Asn	agc Ser	aaa Lys 1355	Gly	caa Gln	cct Pro	ggc Gly	gga Gly 1360	4080
gly aaa	gtg Val	tgc Cys	gga Gly	gcg Ala 1369	ctg Leu	tat Tyr	aag Lys	aag Lys	ttc Phe 1370	Pro	gaa Glu	agc Ser	ttc Phe	gat Asp 1375	Leu	4128
cag Gln	ccg Pro	atc Ile	gaa Glu 1380	Val	gga Gly	aaa Lys	gcg Ala	cga Arg 1385	Leu	gtc Val	aaa Lys	ggt Gly	gca Ala 1390	Ala	aaa Lys	4176
cat His	atc Ile	att Ile 1395	His	gcc Ala	gta Val	gga Gly	cca Pro 1400	Asn	ttc Phe	aac Asn	aaa Lys	gtt Val 1405	Ser	gag Glu	gtt Val	4224
gaa Glu	ggt Gly 1410	Asp	aaa Lys	cag Gln	ttg Leu	gca Ala 1415	Glu	gct Ala	tat Tyr	gag Glu	tcc Ser 1420	Ile	gct Ala	aag Lys	att Ile	4272
gtc Val 1425	Asn	gat Asp	aac Asn	aat Asn	tac Tyr 1430	Lys	tca Ser	gta Val	gcg Ala	att Ile 1435	Pro	ctg Leu	ttg Leu	tcc Ser	acc Thr 1440	4320

ggc atc ttt Gly Ile Phe	tcc ggg aac Ser Gly Asr 1445	: aaa gat c 1 Lys Asp A	cga cta acc Arg Leu Thr 1450	caa tca ttg Gln Ser Leu	aac cat Asn His 1455	4368
ttg ctg aca Leu Leu Thr	gct tta gad Ala Leu Asp 1460	Thr Thr A	gat gca gat Asp Ala Asp 1465	gta gcc ata Val Ala Ile 1470	Tyr Cys	4416
agg gac aag Arg Asp Lys 147	Lys Trp Glu	atg act c Met Thr L 1480	ctc aag gaa Leu Lys Glu	gca gtg gct Ala Val Ala 1485	agg aga Arg Arg	4464
gaa gca gtg Glu Ala Val 1490	gag gag ata Glu Glu Ile	tgc ata t Cys Ile S 1495	ccc gac gac Ser Asp Asp	tct tca gtg Ser Ser Val 1500	aca gaa Thr Glu	4512
cct gat gca Pro Asp Ala 1505	gag ctg gtg Glu Leu Val 151	Arg Val H	cat ccg aag His Pro Lys 1515	agt tct ttg Ser Ser Leu 5	gct gga Ala Gly 1520	4560
agg aag ggc Arg Lys Gly	tac agc aca Tyr Ser Thr 1525	agc gat g Ser Asp G	ggc aaa act Gly Lys Thr 1530	ttc tca tat Phe Ser Tyr	ttg gaa Leu Glu 1535	4608
ggg acc aag Gly Thr Lys	ttt cac cag Phe His Gln 1540	. Ala Ala L	aag gat ata Lys Asp Ile 1545	gca gaa att Ala Glu Ile 1550	Asn Ala	4656
atg tgg ccc Met Trp Pro 155	Val Ala Thr	gag gcc a Glu Ala A 1560	aat gag cag Asn Glu Gln	gta tgc atg Val Cys Met 1565	tat atc Tyr Ile	4704
ctc gga gaa Leu Gly Glu 1570	agc atg agc Ser Met Ser	agt att a Ser Ile A 1575	agg tcg aaa Arg Ser Lys	tgc ccc gtc Cys Pro Val 1580	gaa gag Glu Glu	4752
tcg gaa gcc Ser Glu Ala 1585	tcc aca cca Ser Thr Pro 159	Pro Ser T	cg ctg cct Thr Leu Pro 1595	tgc ttg tgc Cys Leu Cys	atc cat Ile His 1600	4800
gcc atg act Ala Met Thr	cca gaa aga Pro Glu Arg 1605	gta cag c Val Gln A	gc cta aaa arg Leu Lys 1610	gcc tca cgt Ala Ser Arg	cca gaa Pro Glu 1615	4848
caa att act Gln Ile Thr	gtg tgc tca Val Cys Ser 1620	Ser Phe P	ca ttg ccg Pro Leu Pro .625	aag tat aga Lys Tyr Arg 1630	Ile Thr	4896
ggt gtg cag Gly Val Gln 163	Lys Ile Gln	tgc tcc c Cys Ser G 1640	ag cct ata In Pro Ile	ttg ttc tca Leu Phe Ser 1645	ccg aaa Pro Lys	4944
gtg cct gcg Val Pro Ala 1650	tat att cat Tyr Ile His	cca agg a Pro Arg L 1655	ag tat ctc ys Tyr Leu	gtg gaa aca Val Glu Thr 1660	cca ccg Pro Pro	4992

gta gac gag ac Val Asp Glu Th 1665	et eeg gag eea or Pro Glu Pro 1670	tcg gca (Ser Ala (gag aac caa Glu Asn Gln 1675	tcc aca gag Ser Thr Glu	ggg 5040 Gly 1680
aca cct gaa ca Thr Pro Glu Gl	aa cca cca ctt In Pro Pro Leu 1685	Ile Thr	gag gat gag Glu Asp Glu 1690	acc agg act Thr Arg Thr	Arg
acg cct gag co Thr Pro Glu Pr 17	eg atc atc atc co Ile Ile Ile 700	gaa gag g Glu Glu (1705	gaa gaa gag Glu Glu Glu	gat agc ata Asp Ser Ile 1710	agt 5136 Ser
ttg ctg tca ga Leu Leu Ser As 1715	at ggc ccg acc sp Gly Pro Thr	cac cag of His Gln N	gtg ctg caa Val Leu Gln	gtc gag gca Val Glu Ala 1725	gac 5184 Asp
att cac ggg co Ile His Gly Pr 1730	eg ccc tct gta o Pro Ser Val 173	Ser Ser S	tca tcc tgg Ser Ser Trp 174	Ser Ile Pro	cat 5232 His
gca tcc gac tt Ala Ser Asp Ph 1745	t gat gtg gac ne Asp Val Asp 1750	agt tta t Ser Leu S	tcc ata ctt Ser Ile Leu 1755	gac acc ctg Asp Thr Leu	gag 5280 Glu 1760
gga gct agc gt Gly Ala Ser Va	g acc agc ggg l Thr Ser Gly 1765	Ala Thr	tca gcc gag Ser Ala Glu 1770	act aac tct Thr Asn Ser 1775	Tyr
ttc gca aag ag Phe Ala Lys Se 17	t atg gag ttt r Met Glu Phe 80	ctg gcg o Leu Ala <i>I</i> 1785	cga ccg gtg Arg Pro Val	cct gcg cct Pro Ala Pro 1790	cga 5376 Arg
aca gta ttc ag Thr Val Phe Ar 1795	g aac cct cca g Asn Pro Pro	cat ccc o His Pro <i>I</i> 1800	gct ccg cgc Ala Pro Arg	aca aga aca Thr Arg Thr 1805	ccg 5424 Pro
tca ctt gca cc Ser Leu Ala Pr 1810	c agc agg gcc o Ser Arg Ala 181	Cys Ser A	aga acc agc Arg Thr Ser 182	Leu Val Ser	acc 5472 Thr
ccg cca ggc gt Pro Pro Gly Va 1825	g aat agg gtg 1 Asn Arg Val 1830	atc act a	aga gag gag	ctc gag gcg	ctt 5520 Leu 1840
acc ccg tca cg Thr Pro Ser Ar	c act cct agc g Thr Pro Ser 1845	Arg Ser V	gtc tcg aga Val Ser Arg 1850	acc agc ctg Thr Ser Leu 1855	gtc 5568 Val
tcc aac ccg cc Ser Asn Pro Pr 18	a ggc gta aat o Gly Val Asn 60	agg gtg a Arg Val I 1865	att aca aga Ile Thr Arg	gag gag ttt Glu Glu Phe 1870	gag 5616 Glu
gcg ttc gta gc Ala Phe Val Al 1875	a caa caa caa a Gln Gln Gln	tga cgg t * Arg F 1880	ett gat gcg Phe Asp Ala	ggt gca tac Gly Ala Tyr 1885	atc 5664 Ile

ttt tcc tcc Phe Ser Ser 1890	Asp Thr Gly	caa ggg c Gln Gly H 1895	at tta caa Iis Leu Gln	caa aaa tca Gln Lys Ser 1900	gta agg 571: Val Arg	2
caa acg gtg Gln Thr Val 1905	cta tcc gaa Leu Ser Glu	gtg gtg t Val Val L 1910	tg gag agg eu Glu Arg	acc gaa ttg Thr Glu Leu 1915	gag att 5760 Glu Ile	0
tcg tat gcc Ser Tyr Ala 1920	ccg cgc ctc Pro Arg Leu 192	Asp Gln G	gaa aaa gaa lu Lys Glu 1930	gaa tta cta Glu Leu Leu)	cgc aag 5808 Arg Lys 1935	8
aaa tta cag Lys Leu Gln	tta aat ccc Leu Asn Pro 1940	aca cct go Thr Pro A	ct aac aga la Asn Arg 1945	agc aga tac Ser Arg Tyr	cag tcc 5856 Gln Ser 1950	6
agg aag gtg Arg Lys Val	gag aac atg Glu Asn Met 1955	Lys Ala I	ta aca gct le Thr Ala 960	aga cgt att Arg Arg Ile 1965	Leu Gln	4
ggc cta ggg Gly Leu Gly 1970	His Tyr Leu	aag gca ga Lys Ala Gi 1975	aa gga aaa lu Gly Lys	gtg gag tgc Val Glu Cys 1980	tac cga 5952 Tyr Arg	2
acc ctg cat Thr Leu His 1985	cct gtt cct Pro Val Pro	ttg tat to Leu Tyr Se 1990	ca tct agt er Ser Ser	gtg aac cgt Val Asn Arg 1995	gcc ttt 6000 Ala Phe)
tca agc ccc Ser Ser Pro 2000	aag gtc gca Lys Val Ala 2005	Val Glu Al	cc tgt aac la Cys Asn 2010	Ala Met Leu	aaa gag 6048 Lys Glu 2015	3
aac ttt ccg Asn Phe Pro	act gtg gct Thr Val Ala 2020	tct tac to Ser Tyr Cy	gt att att ys Ile Ile 2025	cca gag tac Pro Glu Tyr	gat gcc 6096 Asp Ala 2030	5
	Met Val Asp 2035	Gly Ala Se	er Cys Cys 040	Leu Asp Thr 2045	Ala Ser	Ļ
ttt tgc cct Phe Cys Pro 2050	Ala Lys Leu	cgc agc tt Arg Ser Ph 2055	tt cca aag he Pro Lys	aaa cac tcc Lys His Ser 2060	tat ttg 6192 Tyr Leu	<u> </u>
gaa ccc aca Glu Pro Thr 2065	ata cga tcg Ile Arg Ser	gca gtg co Ala Val Pr 2070	ct tca gcg ro Ser Ala	atc cag aac Ile Gln Asn 2075	acg ctc 6240 Thr Leu)
cag aac gtc Gln Asn Val : 2080	ctg gca gct Leu Ala Ala 2085	Ala Thr Ly	aa aga aat ys Arg Asn 2090	Cys Asn Val	acg caa 6288 Thr Gln 2095	}
atg aga gaa Met Arg Glu :	ttg ccc gta Leu Pro Val 2100	ttg gat to Leu Asp Se	cg gcg gcc er Ala Ala 2105	Phe Asn Val	gaa tgc 6336 Glu Cys 2110	;
ttc aag aaa Phe Lys Lys	tat gcg tgt Tyr Ala Cys 2115	Asn Asn Gl	aa tat tgg lu Tyr Trp 120	gaa acg ttt Glu Thr Phe 2125	aaa gaa 6384 Lys Glu	:

aac ccc atc ag Asn Pro Ile Ar 2130	g ctt act ga g Leu Thr Gl	a gaa aac g u Glu Asn 2135	gtg gta aat Val Val Asn	tac att acc Tyr Ile Thr 2140	aaa 6432 Lys
tta aaa gga cca Leu Lys Gly Pro 2145	a aaa gct gc D Lys Ala Al 21	a Ala Leu :	ttt gcg aag Phe Ala Lys 2155	Thr His Asn	ttg 6480 Leu
aat atg ttg caq Asn Met Leu Gli 2160	g gac ata cc n Asp Ile Pr 2165	a atg gac a o Met Asp A	agg ttt gta Arg Phe Val 2170	atg gac tta Met Asp Leu	aag 6528 Lys 2175
aga gac gtg aaa Arg Asp Val Lys	a gtg act cc s Val Thr Pr 2180	o Gly Thr	aaa cat act Lys His Thr 2185	gaa gaa cgg Glu Glu Arg 219	Pro
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ccg aac att cat Pro Asn Ile His 2225	aca ctg tt Thr Leu Pho 22	e Asp Met S	tcg gct gaa Ser Ala Glu 2235	Asp Phe Asp	gct 6720 Ala
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Thr	Asp	Asn 35	Asp	His	Ala	Asn	Ala 40	Arg	Ala	Phe	Ser	His 45		Ala	Ser	
Lys	Leu 50		Glu	Thr	Glu	Val 55		Pro	Ser	Asp	Thr 60		Leu	Asp	Ile	
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Ile	Cys	Pro	Met	Arg 85	Cys	Ala	Glu	Asp	Pro 90		Arg	Leu	Tyr	Lys 95		
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Ser Leu Tyr His Gln Ala Asn Lys Gly Val Arg Val Ala Tyr Trp Ile
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Pro Ser Tyr Ser Thr Asn Trp Ala Asp Glu Thr Val Leu Thr Ala Arg
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Tyr Lys Val Asn Glu Asn Pro Leu Tyr Ala Pro Thr Ser Glu His Val
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Asn Val Leu Leu Thr Arg Thr Glu Asp Arg Ile Val Trp Lys Thr Leu
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Ala Gly Asp Pro Trp Ile Lys Thr Leu Thr Ala Lys Tyr Pro Gly Asn
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Thr Asp	Lys	Ala	His 1045		Ala	Glu	Ile	Val 1050		Asn	Gln	Leu	Cys 1055	
Arg Phe	Phe	Gly 1060		Asp	Leu	Asp	Ser 1065		Leu	Phe	Ser	Ala 1070		Thr
Val Pro	1075	5				1080)				1085	5		
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Tyr Pro 1105	Gln	Leu	Pro	Arg 1110		Val	Ala	Thr	Gly 1115		Val	Tyr	Asp	Met 1120
Asn Thr	Gly	Thr	Leu 1125		Asn	Tyr	Asp	Pro 1130		Ile	Asn	Leu	Val 1135	
Val Asn	Arg	Arg 1140		Pro	His	Ala	Leu 1145		Leu	His	His	Asn 1150	Glu	
Pro Gln	Ser 1155		Phe	Ser	Ser	Phe 1160		Ser	Lys	Leu	Lys 1165		Arg	Thr
Val Leu 117	0				1175	5				1180)			
Trp Leu 1185				1190)				1195	•				1200
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Ile Lys	Leu 1235		Met	Leu	Thr	Lys 1240	Lys		Cys	Leu	His 1245	Leu		Pro
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Ser Thr	Leu 1315	Thr					Gly					Glu		Gly
Cys Ala	Pro	Ser	Tvr	His	Val			Gly	Asp	Ile	Ala		Ala	Thr
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                                          1725
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1850

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Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
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His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Leu Asn Pro
ggc ctt tta gaa aca tca gaa gga tgt aaa caa ata atg aaa cag cta
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Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Met Lys Gln Leu
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acc Thr	aag Lys	gaa Glu	gcc Ala 100	tta Leu	gat Asp	aag Lys	ata Ile	gag Glu 105	gaa Glu	gaa Glu	caa Gln	aac Asn	aaa Lys 110	tgt Cys	cag Gln	336
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11e 385	Val	aaa Lys	Cys	Phe	Asn 390	Cys	Gly	Lys	Glu	Gly 395	His	Ile	Ala	Arg	Asn 400	1200
Cys	Arg	gcc Ala	Pro	Arg 405	Lys	Lys	Gly	Cys	Trp 410	Lys	Cys	Gly	Lys	Glu 415	Gly	1248
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att Ile	tgg Trp	cct Pro 435	tcc Ser	cac His	aag Lys	gly aaa	agg Arg 440	cca Pro	gly aaa	aat Asn	ttc Phe	ctt Leu 445	cag Gln	aac Asn	aga Arg	1344
cca Pro	gag Glu 450	cca Pro	aca Thr	gcc Ala	cca Pro	cca Pro 455	gca Ala	gag Glu	agc Ser	ttc Phe	agg Arg 460	ttc Phe	gaa Glu	gag Glu	aca Thr	1392
acc Thr 465	ccc Pro	gct Ala	ccg Pro	aaa Lys	cag Gln 470	gag Glu	ccg Pro	ata Ile	gaa Glu	agg Arg 475	gaa Glu	ccc Pro	tta Leu	act Thr	tcc Ser 480	1440
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<211> 492

<212> PRT

<213> Artificial Sequence

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Li

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3

T

Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly 405 410 His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys 420 425 Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Asn Arg 440 445 Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Arg Phe Glu Glu Thr 455 460 Thr Pro Ala Pro Lys Gln Glu Pro Ile Glu Arg Glu Pro Leu Thr Ser 470 475 Leu Lys Ser Leu Phe Gly Ser Asp Pro Leu Ser Gln 485 <210> 6 <211> 813 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence; Note = synthetic construct <221> CDS <222> (1) ... (813) atg agc cat att caa cgg gaa acg tct tgc tcg agg ccg cga tta aat 48 Met Ser His Ile Gln Arg Glu Thr Ser Cys Ser Arg Pro Arg Leu Asn tcc aac atg gat gct gat tta tat ggg tat aaa tgg gct cgc gat aat 96 Ser Asn Met Asp Ala Asp Leu Tyr Gly Tyr Lys Trp Ala Arg Asp Asn 20 gtc ggg caa tca ggt gcg aca atc tat cga ttg tat ggg aag ccc gat 144 Val Gly Gln Ser Gly Ala Thr Ile Tyr Arg Leu Tyr Gly Lys Pro Asp 40 gcg cca gag ttg ttt ctg aaa cat ggc aaa ggt agc gtt gcc aat gat 192 Ala Pro Glu Leu Phe Leu Lys His Gly Lys Gly Ser Val Ala Asn Asp 50 55 gtt aca gat gag atg gtc aga cta aac tgg ctg acg gaa ttt atg cct 240 Val Thr Asp Glu Met Val Arg Leu Asn Trp Leu Thr Glu Phe Met Pro 65 ctt ccg acc atc aag cat ttt atc cgt act cct gat gat gca tgg tta 288 Leu Pro Thr Ile Lys His Phe Ile Arg Thr Pro Asp Asp Ala Trp Leu ctc acc act gcg atc ccc ggg aaa aca gca ttc cag gta tta gaa gaa 336

Leu Thr Thr Ala Ile Pro Gly Lys Thr Ala Phe Gln Val Leu Glu Glu

105

tat Tyr	cct Pro	gat Asp 115	tca Ser	ggt Gly	gaa Glu	aat Asn	att Ile 120	gtt Val	gat Asp	gcg Ala	ctg Leu	gca Ala 125	gtg Val	ttc Phe	ctg Leu	384
cgc Arg	cgg Arg 130	ttg Leu	cat His	tcg Ser	att Ile	cct Pro 135	gtt Val	tgt Cys	aat Asn	tgt Cys	cct Pro 140	ttt Phe	aac Asn	agc Ser	gat Asp	432
cgc Arg 145	gta Val	ttt Phe	cgt Arg	ctc Leu	gct Ala 150	cag Gln	gcg Ala	caa Gln	tca Ser	cga Arg 155	atg Met	aat Asn	aac Asn	ggt Gly	ttg Leu 160	480
gtt Val	gat Asp	gcg Ala	agt Ser	gat Asp 165	ttt Phe	gat Asp	gac Asp	gag Glu	cgt Arg 170	aat Asn	ggc Gly	tgg Trp	cct Pro	gtt Val 175	gaa Glu	528
caa Gln	gtc Val	tgg Trp	aaa Lys 180	gaa Glu	atg Met	cat His	aag Lys	ctt Leu 185	ttg Leu	cca Pro	ttc Phe	tca Ser	ccg Pro 190	gat Asp	tca Ser	576
gtc Val	gtc Val	act Thr 195	cat His	ggt Gly	gat Asp	ttc Phe	tca Ser 200	ctt Leu	gat Asp	aac Asn	ctt Leu	att Ile 205	ttt Phe	gac Asp	gag Glu	624
gl ^à aaa	aaa Lys 210	tta Leu	ata Ile	ggt Gly	tgt Cys	att Ile 215	gat Asp	gtt Val	gga Gly	cga Arg	gtc Val 220	gga Gly	atc Ile	gca Ala	gac Asp	672
cga Arg 225	tac Tyr	cag Gln	gat Asp	ctt Leu	gcc Ala 230	atc Ile	cta Leu	tgg Trp	aac Asn	tgc Cys 235	ctc Leu	ggt Gly	gag Glu	ttt Phe	tct Ser 240	720
cct Pro	tca Ser	tta Leu	cag Gln	aaa Lys 245	cgg Arg	ctt Leu	ttt Phe	caa Gln	aaa Lys 250	tat Tyr	ggt Gly	att Ile	gat Asp	aat Asn 255	cct Pro	768
gat Asp	atg Met	aat Asn	aaa Lys 260	ttg Leu	cag Gln	ttt Phe	cat His	ttg Leu 265	atg Met	ctc Leu	gat Asp	gag Glu	ttt Phe 270	ttc Phe		813

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<211> 271

<212> PRT

<213> Artificial Sequence

<220>

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960

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Ala Pro Glu Leu Phe Leu Lys His Gly Lys Gly Ser Val Ala Asn Asp
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                                             60
Val Thr Asp Glu Met Val Arg Leu Asn Trp Leu Thr Glu Phe Met Pro
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                                         75
Leu Pro Thr Ile Lys His Phe Ile Arg Thr Pro Asp Asp Ala Trp Leu
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                                     90
Leu Thr Thr Ala Ile Pro Gly Lys Thr Ala Phe Gln Val Leu Glu Glu
             100
                                 105
Tyr Pro Asp Ser Gly Glu Asn Ile Val Asp Ala Leu Ala Val Phe Leu
                             120
                                                 125
Arg Arg Leu His Ser Ile Pro Val Cys Asn Cys Pro Phe Asn Ser Asp
                         135
Arg Val Phe Arg Leu Ala Gln Ala Gln Ser Arg Met Asn Asn Gly Leu
                     150
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Val Asp Ala Ser Asp Phe Asp Asp Glu Arg Asn Gly Trp Pro Val Glu
                 165
                                     170
Gln Val Trp Lys Glu Met His Lys Leu Leu Pro Phe Ser Pro Asp Ser
            180
                                 185
Val Val Thr His Gly Asp Phe Ser Leu Asp Asn Leu Ile Phe Asp Glu
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Gly Lys Leu Ile Gly Cys Ile Asp Val Gly Arg Val Gly Ile Ala Asp
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                                             220
Arg Tyr Gln Asp Leu Ala Ile Leu Trp Asn Cys Leu Gly Glu Phe Ser
                    230
                                         235
Pro Ser Leu Gln Lys Arg Leu Phe Gln Lys Tyr Gly Ile Asp Asn Pro
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tggettcaaa aetgategaa aeggaggtgg aeceateega caegateett gacattggaa
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aac Asn	ccg Pro	ttc Phe	gcg Ala 20	gcc Ala	ccg Pro	cgc Arg	agg Arg	ccc Pro 25	tgg Trp	ttc Phe	ccc Pro	aga Arg	acc Thr 30	gac Asp	cct Pro	96
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		aag Lys														192
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999 Gly 145	aag Lys	tta Leu	ttc Phe	agg Arg	ccg Pro 150	atg Met	cat His	gtg Val	gaa Glu	ggc Gly 155	aag Lys	atc Ile	gac Asp	aac Asn	gac Asp 160	480
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Glu	Gln	Trp 275	Ser	Leu	Val	acc Thr	Thr 280	Met	Cys	Leu	Leu	Ala 285	Asn	Val	Thr	864
Phe	Pro 290	Cys	Ala	Gln	Pro	cca Pro 295	Ile	Cys	Tyr	Asp	Arg 300	Lys	Pro	Ala	Glu	912
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1026

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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence; Note = synthetic construct

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Thr Phe Lys Gln Arg Arg Asp Ala Pro Pro Glu Gly Pro Ser Ala Lys
50 55 60

Lys Pro Lys Lys Glu Ala Ser Gln Lys Gln Lys Gly Gly Gln Gly 65 70 75 80

Lys Lys Lys Lys Asn Gln Gly Lys Lys Ala Lys Thr Gly Pro Pro
85

Asn Pro Lys Ala Gln Asn Gly Asn Lys Lys Lys Thr Asn Lys Lys Pro
100 105 110

Gly Lys Arg Gln Arg Met Val Met Lys Leu Glu Ser Asp Lys Thr Phe
115 120 125

Pro Ile Met Leu Glu Gly Lys Ile Asn Gly Tyr Ala Cys Val Val Gly 130 135 140

165 170 175

Tyr Ala Asp Val Pro Gln Asn Met Arg Ala Asp Thr Phe Lys Tyr Thr

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2943

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Gln Glu Thr Ala Pro Gly Asn Pro His Gly Leu Pro His Glu Val Ile
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Thr His Tyr Tyr His Arg Tyr Pro Met Ser Thr Ile Leu Gly Leu Ser
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Phe Cys Arg Ser Arg Val Ala Cys Leu Thr Pro Tyr Arg Leu Thr Pro
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tgg Trp	ggc	tgc Cys	tct Ser 580	gga Gly	aaa Lys	atc Ile	atc Ile	tgc Cys 585	acc Thr	act Thr	gct Ala	gtg Val	cct Pro 590	tgg Trp	aac Asn	1776
tcc Ser	agt Ser	tgg Trp 595	agt Ser	aat Asn	aaa Lys	tct Ser	caa Gln 600	gaa Glu	gat Asp	att Ile	tgg Trp	gat Asp 605	aac	atg Met	acc Thr	1824
tgg Trp	atg Met 610	cag Gln	tgg Trp	gat Asp	aga Arg	gaa Glu 615	att Ile	agt Ser	aat Asn	tac Tyr	aca Thr 620	ggc Gly	aca Thr	ata Ile	tat Tyr	1872

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ATTORNEY DOCKET NO. 01113.0001U3

			_	_	_			_	_			aat Asn	_		_	1920
		_	_	_	_				_			tgg Trp				1968
			-								_	ata Ile	_			2016
_			_	_					_		_	ata Ile 685			_	2064
_		_					_	_		_		ctt Leu			-	2112
												gaa Glu				2160
	_		_	_			_					ttc Phe		-		2208
_		_	_	_		_	_	_			-	tac Tyr			-	2256
												ctt Leu 765				2304
-	_				_	_	_			_	_	ctt Leu	_		_	2352
								_				aga Arg	_	_		2400
Lys	Leu	Phe	Asp	Thr 805	Ile	Ala	Ile	Āla	Val 810	Āla	Glu	gga Gly	Thr	Asp 815	Arg	2448
												cgc Arg				2496
	aga Arg		_	_			_	_	_	-						2532

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Leu Asn Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu
                           40
Ala Lys Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Lys
                       55
Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro
                   70
Asn Pro Arg Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met
                                   90
Trp Lys Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu
                               105
                                                   110
Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val
       115
                           120
                                               125
Thr Leu Asn Cys Thr Asn Ala Pro Ala Tyr Asn Asn Ser Met His Gly
                      135
                                           140
Glu Met Lys Asn Cys Ser Phe Asn Thr Thr Glu Ile Arg Asp Arg
                   150
                                       155
Lys Gln Lys Ala Tyr Ala Leu Phe Tyr Lys Pro Asp Val Val Pro Leu
               165
                                   170
Asn Arg Arg Glu Glu Asn Asn Gly Thr Gly Glu Tyr Ile Leu Ile Asn
           180
                               185
Cys Asn Ser Ser Thr Ile Thr Gln Ala Cys Pro Lys Val Thr Phe Asp
       195
                           200
Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys
                       215
                                           220
Cys Asn Asn Lys Thr Phe Asn Gly Thr Gly Pro Cys Asn Asn Val Ser
                   230
Thr Val Gln Cys Thr His Gly Ile Met Pro Val Val Ser Thr Gln Leu
                                   250
Leu Leu Asn Gly Ser Leu Ala Glu Glu Glu Ile Ile Arg Ser Glu
                                265
Asn Leu Thr Asn Asn Ile Lys Thr Ile Ile Val His Leu Asn Lys Ser
                           280
Val Glu Ile Val Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile
                        295
Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Gly Glu Ile Ile Gly
                   310
                                       315
Asn Ile Arg Glu Ala His Cys Asn Ile Ser Lys Ser Asn Trp Thr Ser
                325
                                   330
Thr Leu Glu Gln Val Lys Lys Leu Lys Glu His Tyr Asn Lys Thr
                               345
Ile Glu Phe Asn Pro Pro Ser Gly Gly Asp Leu Glu Val Thr Thr His
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360

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Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asn Thr Thr Lys Leu
                        375
                                           380
Phe Ser Asn Asn Ser Asp Ser Asn Asn Glu Thr Ile Thr Leu Pro Cys
                    390
                                      395
Lys Ile Lys Gln Ile Ile Asn Met Trp Gln Lys Val Gly Arg Ala Met
                405
                                   410
Tyr Ala Pro Pro Ile Glu Gly Asn Ile Thr Cys Lys Ser Asn Ile Thr
           420
                               425
Gly Leu Leu Thr Arg Asp Gly Gly Lys Asn Thr Thr Asn Glu Ile
                          440
Phe Arg Pro Gly Gly Gly Asn Met Lys Asp Asn Trp Arg Ser Glu Leu
                       455
                                           460
Tyr Lys Tyr Lys Val Val Glu Ile Glu Pro Leu Gly Val Ala Pro Thr
                   470
                                       475
Lys Ser Lys Arg Arg Val Val Glu Arg Glu Lys Arg Ala Val Gly Leu
               485
                                   490
Gly Ala Val Leu Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly
           500
                               505
Ala Ala Ser Ile Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly
                        520
Ile Val Gln Gln Ser Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln
                       535
                                           540
His Met Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Thr Arg
                   550
                                       555
Val Leu Ala Ile Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Leu
                565
                                   570
Trp Gly Cys Ser Gly Lys Ile Ile Cys Thr Thr Ala Val Pro Trp Asn
                               585
Ser Ser Trp Ser Asn Lys Ser Gln Glu Asp Ile Trp Asp Asn Met Thr
             600
                                               605
Trp Met Gln Trp Asp Arg Glu Ile Ser Asn Tyr Thr Gly Thr Ile Tyr
                      615
                                           620
Arg Leu Leu Glu Asp Ser Gln Asn Gln Gln Glu Lys Asn Glu Lys Asp
                  630
                                      635
Leu Leu Ala Leu Asp Ser Trp Lys Asn Leu Trp Asn Trp Phe Asn Ile
               645
                                  650
Thr Asn Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly
           660
                               665
Leu Ile Gly Leu Arg Ile Ile Phe Gly Val Leu Ala Ile Val Lys Arg
       675
                           680
Val Arg Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Ser
                       695
                                           700
Pro Arg Gly Pro Asp Arg Leu Gly Arg Ile Glu Glu Glu Gly Gly Glu
                   710
                                       715
Gln Asp Lys Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu
               725
Ala Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His His Leu
                               745
Arg Asp Phe Ile Leu Ile Ala Ala Arg Ala Ala Glu Leu Leu Gly Arg
                           760
Ser Ser Leu Arg Gly Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu
                       775
                                           780
Gly Asn Leu Val Gln Tyr Gly Gly Leu Glu Leu Lys Arg Ser Ala Ile
                   790
                                       795
Lys Leu Phe Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg
               805
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